

TECHNICAL INFORMATION AND SERVICE DATA

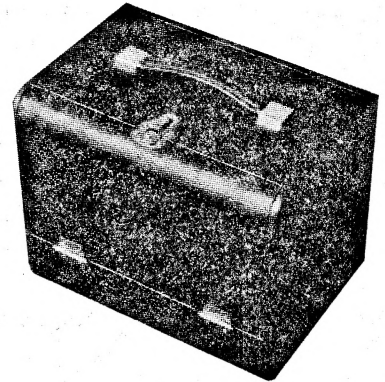


RADIOLAS

PORTABLE MODELS 451-P & 451-PZ
FIVE VALVE, BROADCAST, BATTERY OPERATED
SUPERHETERODYNES

INCORPORATING DATA ON CHRYSLER-DODGE-DE SOTO
 RECEIVER MODEL C.D.D.3.

ISSUED BY
AMALGAMATED WIRELESS (A/SIA.) LTD.



001

ELECTRICAL SPECIFICATIONS.

FREQUENCY RANGES:

Medium Wave 540-1600 Kc/s (555-187.5 M.)

UNDISTORTED POWER OUTPUT 200 milliwatts
 on "Full Battery."

INTERMEDIATE FREQUENCY 455 Kc/s

BATTERY VOLTAGES:

"A" Battery 1.5 volts

"B" Battery 90 volts

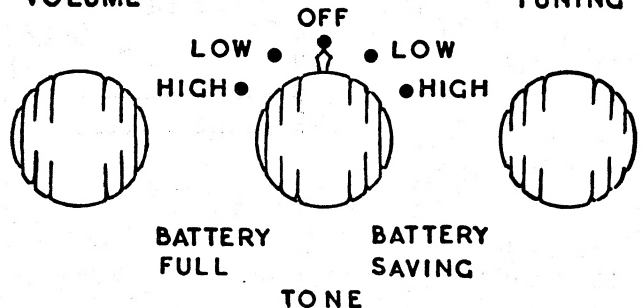
CONTROLS:

BATTERY CONSUMPTION:

"A" Battery 300 mA.

"B" Battery .. "Bty. Full," 14 mA., "Bty. Saving," 9 mA.

VOLUME



LOUDSPEAKER:

5 inch Permanent Magnet—Code No. AC32.

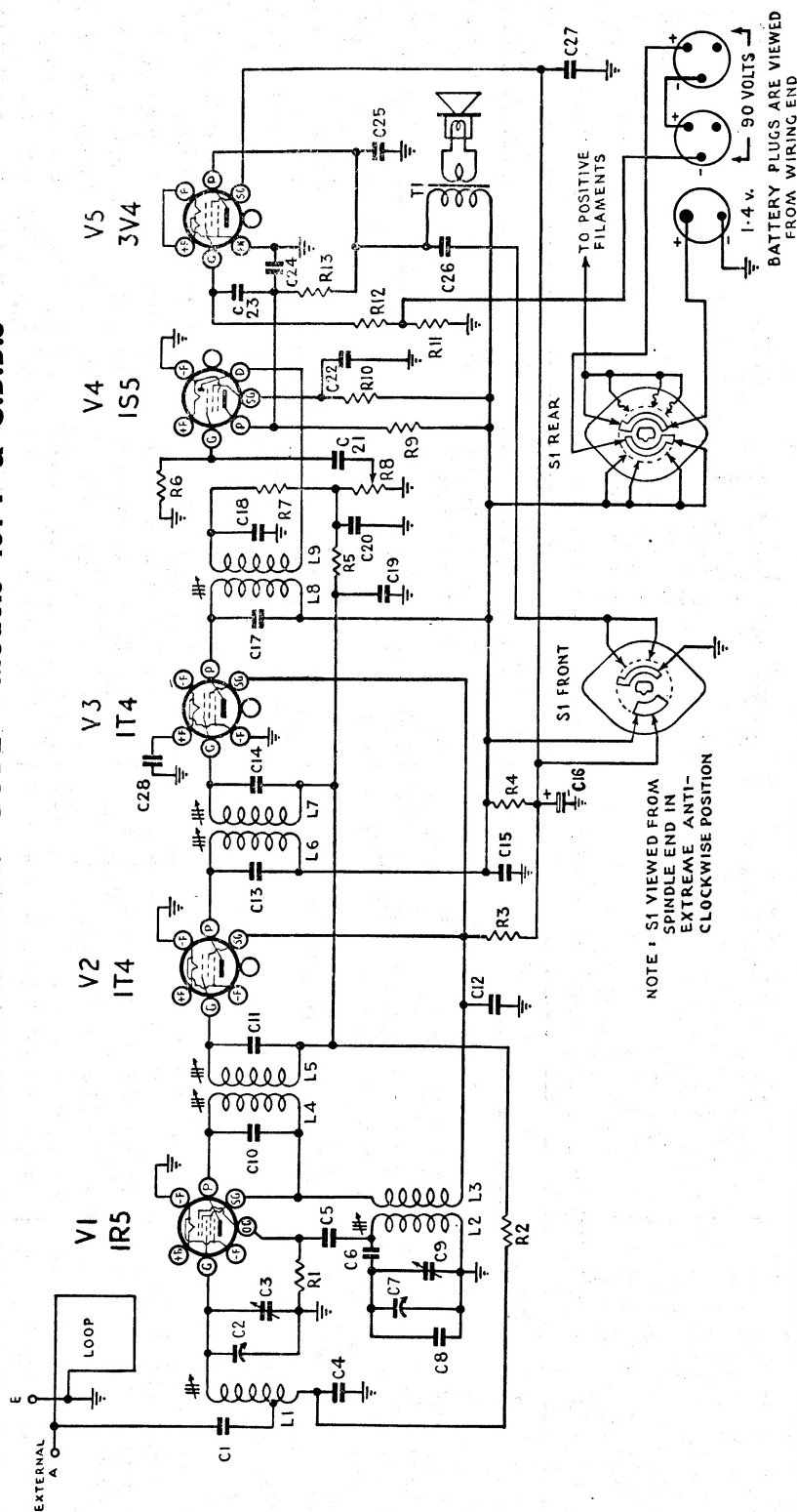
Transformer—XA8.

V.C. Impedance—3 ohms at 400 C.P.S.

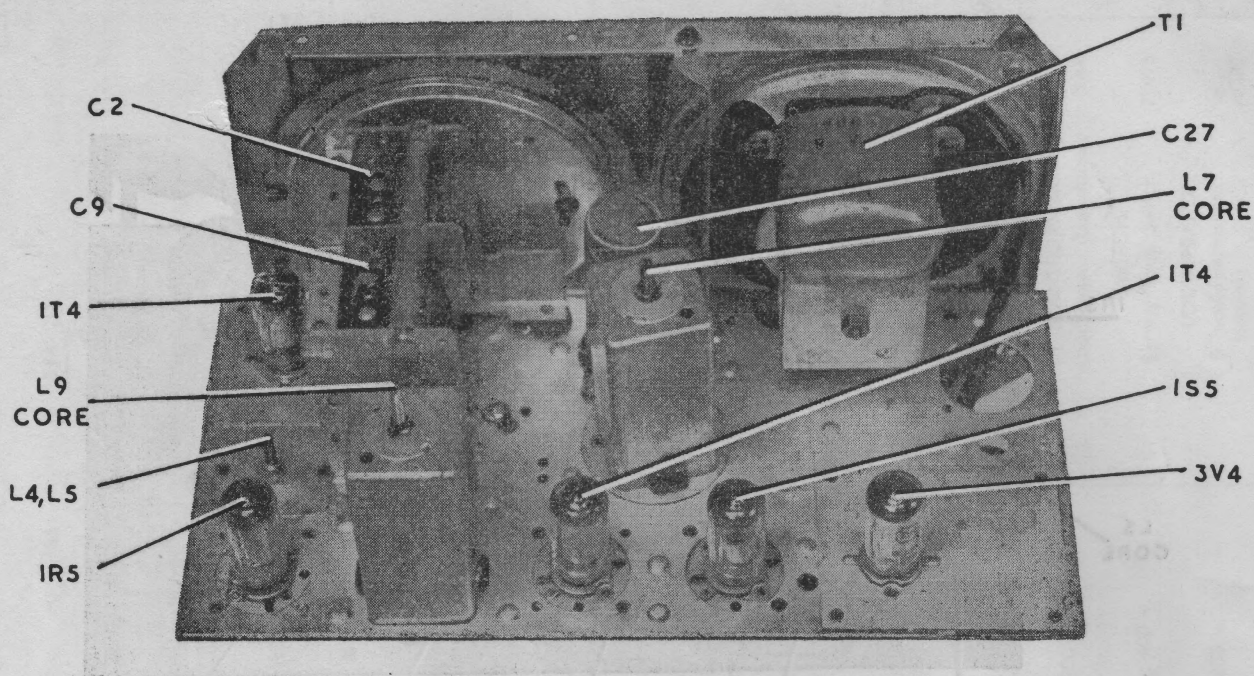
MECHANICAL SPECIFICATIONS.

	Height.	Width.	Depth.
Cabinet Dimensions (inches)	10½	12½	8½
Chassis Base Dimensions (inches) ..	2½	11	5½

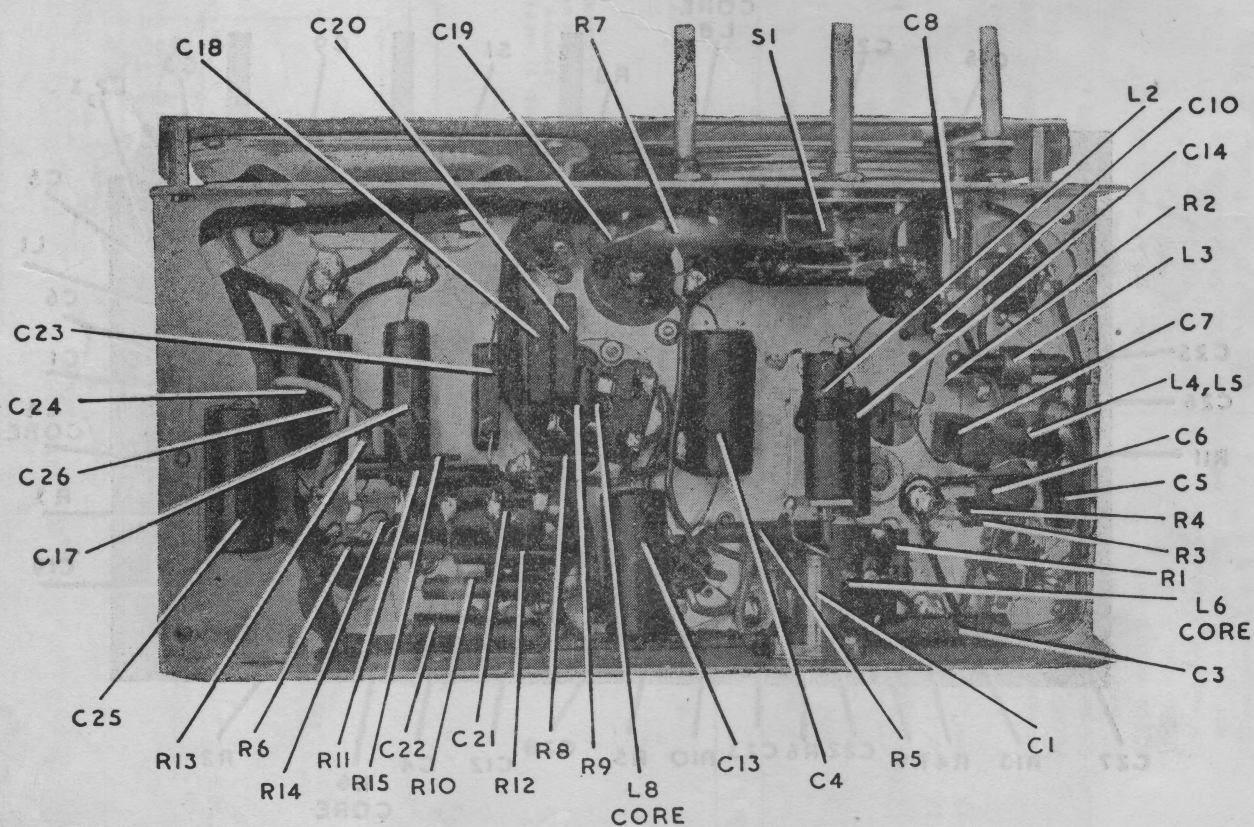
	Height.	Width.	Depth.
Carton Dimensions (inches)	11	13	9
Weight (nett lbs.)	19 lbs. complete with batteries		



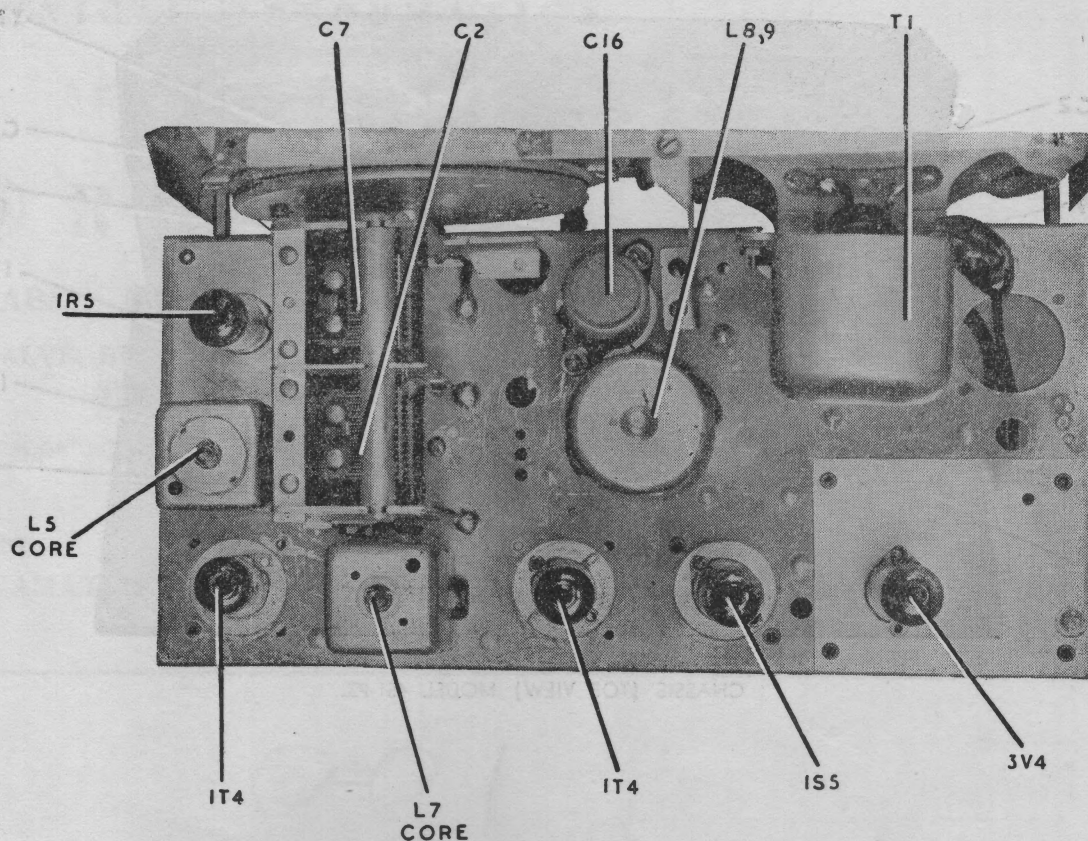
Code No.	Description.	Part No.	Code No.	Description.	Part No.	Code No.	Description.	Part No.	Code No.	Description.	Part No.
L1	INDUCTORS. Aerial Coil	20711	R11	400 ohms, $\frac{1}{2}$ watt		C12	0.4 uF paper, 200 v. working		C23	0.025 uF paper, 400 v. working	
L2, L3	Oscillator Coil	7638	R12	1 megohm, $\frac{1}{2}$ watt		C13	70 uuF mica		C24	100 uuF mica	
L4, L5	1st I.F. Transformer	22416	R13	3.2 megohms, 1 watt		C14	70 uuF mica		C25	0.0025 uF paper, 600 v. working	
L6, L7	2nd I.F. Transformer	22416		CAPACITORS.		C15	0.1 uF paper, 200 v. working		C26	0.025 uF paper, 400 v. working	
L8, L9	3rd I.F. Transformer	15483	C1	0.05 uF paper, 200 v. working		C16	20 uF 200 P.V. electrolytic		C27	0.005 uF paper, 600 v. working	
R1	0.1 megohm, $\frac{1}{2}$ watt		C2	12-430 uuF tuning	15686	C17	70 uuF mica		C28	0.4 uF paper, 200 v. working	
R2	0.1 megohm, $\frac{1}{2}$ watt		C3	3-25 uuF air trimmer	16959	C18	100 uuF mica (in 3rd I.F. Assy.)			TRANSFORMER.	
R3	25,000 ohms, 1 watt		C4	0.05 uF paper, 200 v. working		C19	0.05 uF paper, 200 v. working		T1	Loudspeaker Transformer	XA8
R4	10,000 ohms, 1 watt		C5	50 uuF mica		C20	100 uuF mica (in 3rd I.F. Assy.)			SWITCH.	
R5	2.5 megohms, $\frac{1}{2}$ watt		C6	470 uuF padder		C21	0.025 uF paper, 400 v. working		S1	Battery/Tone Switch	22426
R6	10 megohms, 1 watt		C7	12-430 uuF tuning	15686	C22	0.1 uF paper, 200 v. working			LOUDSPEAKER.	
R7	20,000 ohms, $\frac{1}{2}$ watt (in 3rd I.F. Assy.)		C8	14 uuF mica						5 inch (permanent Magnet)	AC32
R8	0.5 megohm, Volume Con- trol		C9	3-25 uuF air trimmer	16959						
R9	1 megohm, 1 watt	6491	C10	70 uuF mica							
R10	3.2 megohms, 1 watt		C11	70 uuF mica							



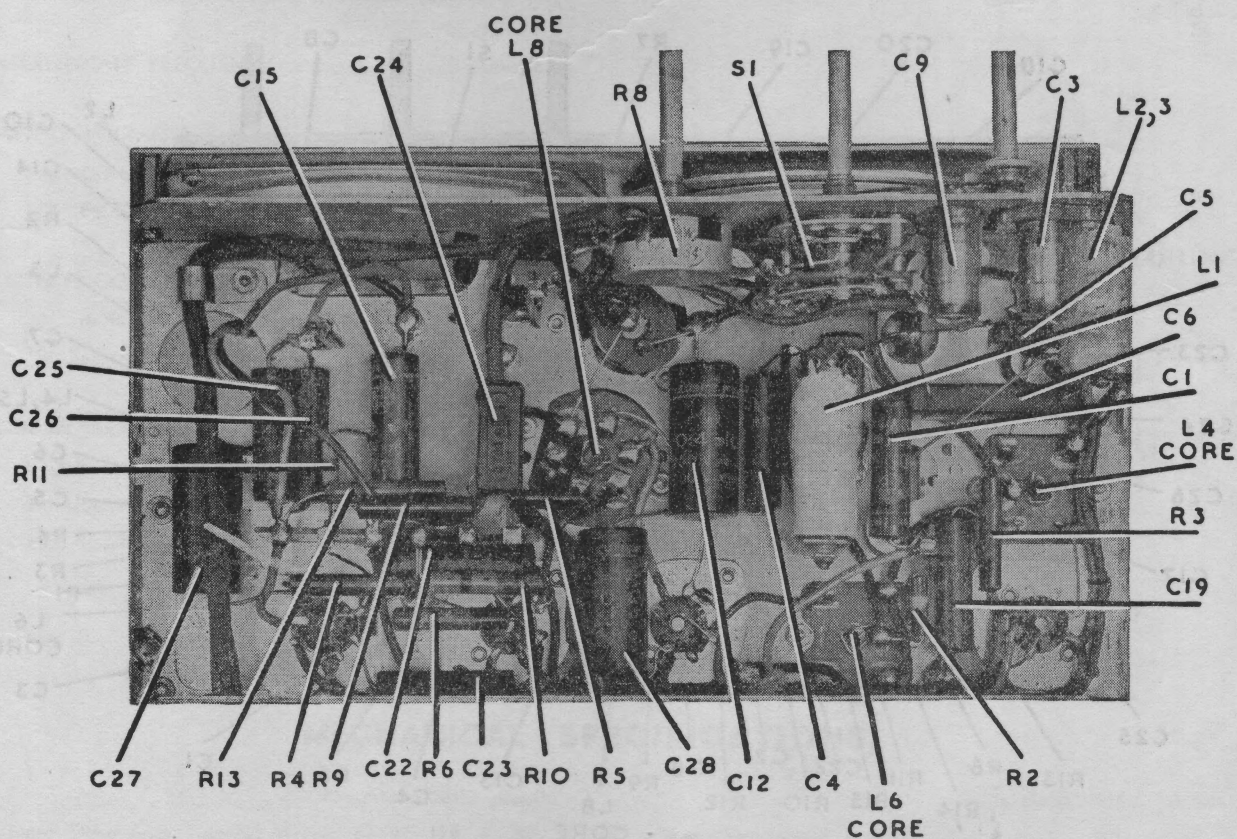
CHASSIS (TOP VIEW) MODEL 451-PZ.



CHASSIS (UNDERNEATH VIEW) MODEL 451-PZ.



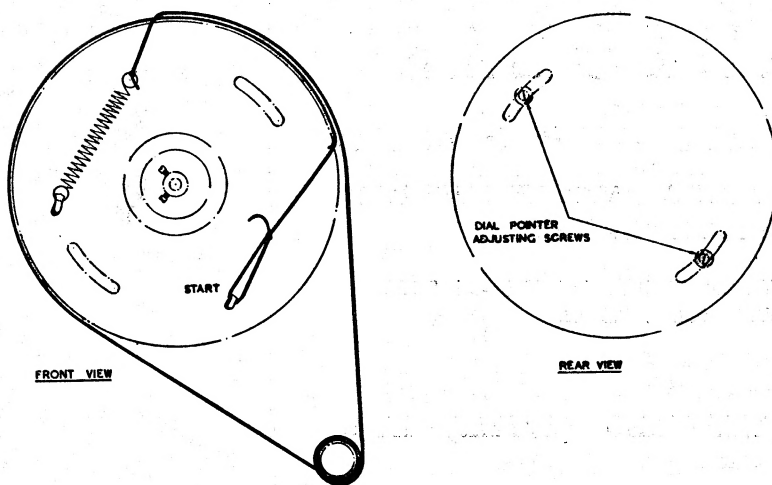
CHASSIS (TOP VIEW) MODEL 451-P and C.D.D.3.



CHASSIS (UNDERNEATH VIEW) MODEL 451-P and C.D.D.3.

Dial Pointer Adjustment.

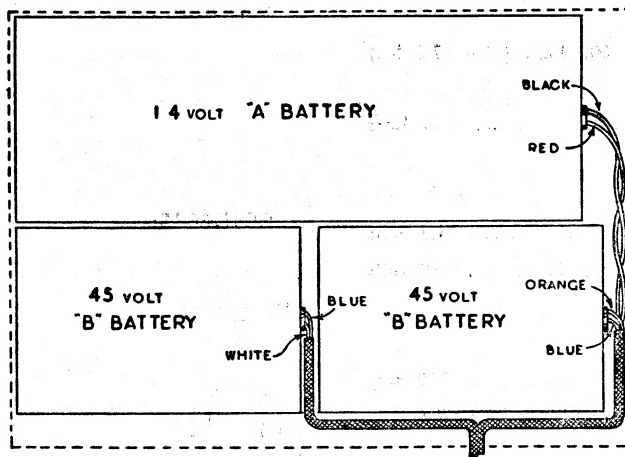
To shift the position of the dial pointer, loosen two screws in the rear of the drive drum—see accompanying diagram—move the drum to the required position and re-tighten the screws.



GENERAL DESCRIPTION.

The Models 451-P, C.D.D.3 and 451-PZ are portable models and are housed in cases attractively finished in weatherproof baggage cloth. They embody a hinged cover, which effectively protects the dial and controls from damage, dust or weather.

Features of design include: Tropic-proof construction, automatic volume control, magnetite cores in I.F. transformers, oscillator coil and aerial coils, air-dielectric trimming capacitors.



ALIGNMENT PROCEDURE.

Manufacturers' Setting of Adjustments.

The receiver is tested by the manufacturers with precision instruments, and all adjusting screws are sealed. Re-alignment should be necessary only when components in tuned circuits are repaired or replaced, or, when it is found that the seals over the adjusting screws have been broken.

It is especially important that the adjustments should not be altered unless in association with the correct testing instruments listed below.

Under no circumstances should the plates of the ganged tuning capacitor be bent, as the unit is accurately aligned during manufacture and cannot be re-adjusted unless by skilled operators using specialised equipment.

For all alignment operations, except aerial stage, connect the "low" side of the signal generator to the receiver chassis and keep the generator output as low as possible to avoid A.V.C. action. Also, keep the volume control in the maximum clockwise position.

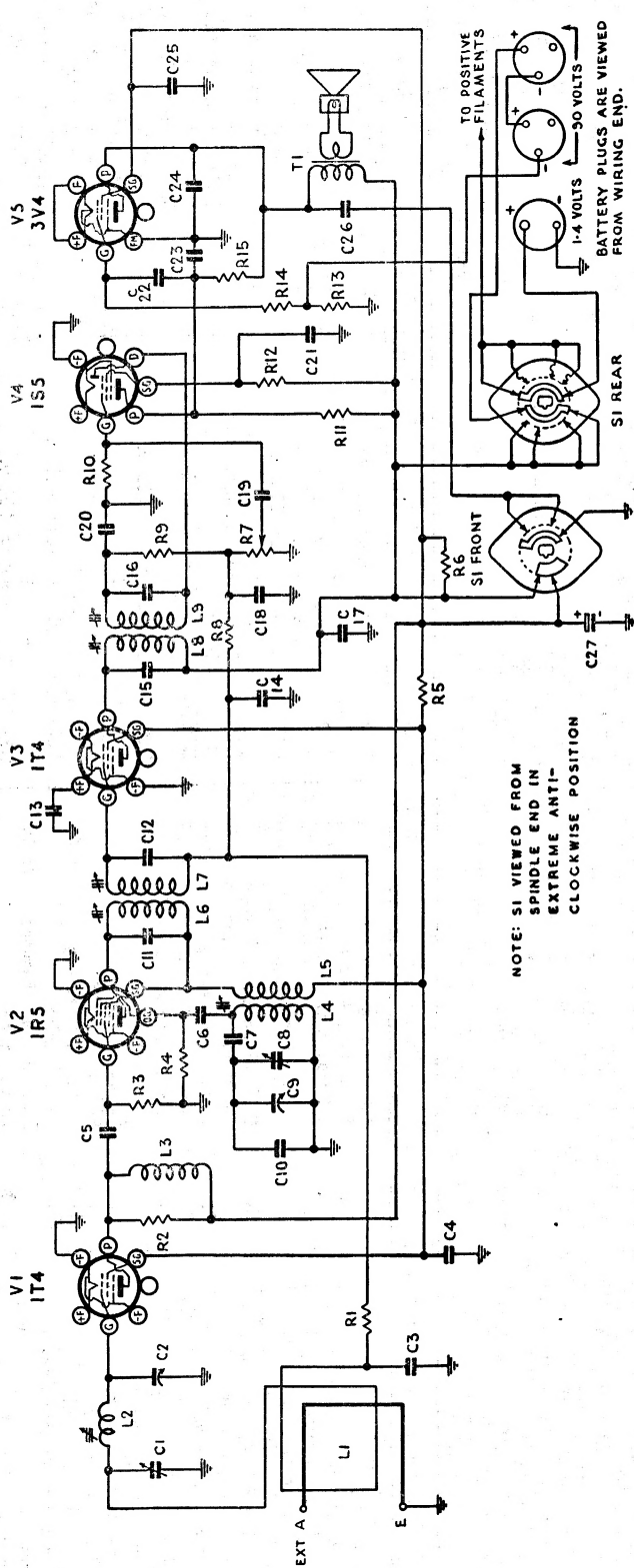
Testing Instruments.

- (1) A.W.A. Junior Signal Generator type 2R3911.
- (2) A.W.A. Modulated Oscillator type J6726.

If the modulated oscillator is used, connect an 0.25 megohm non-inductive resistor across the output terminals.

- (3) A.W.A. Output Meter Type 2M8832.

CIRCUIT DIAGRAM & CODE — Model 451-PZ



A Neutralizing Capacitor (C28) has been incorporated in Model 451-PZ. It is connected between the plate of V3 (1T4) and the junction of C14 and R8.

Code No.	Description.	Part No.	Code No.	Description.	Part No.
INDUCTORS.					
L1	Aerial Coil Loop		C8	3-25 uuF Air Trimmer	16959
L2	Loop Coupling Coil	22719	C9	12-430 uuF Tuning	16615
L3	Compensating Coil	22720	C10	14 uuF mica	
L4, L5	Oscillator Coil	20741	C11	70 uuF mica	
L6, L7	1st I.F. Transformer	22700	C12	70 uuF mica	
L8, L9	2nd I.F. Transformer	22703	C13	0.4 uuF paper, 200 v.	
			C14	working	
			C15	0.01 uuF paper, 600 v.	
			C16	working	
			C17	70 uuF mica	
			C18	70 uuF mica	
			C19	0.1 uuF paper, 200 v.	
			C20	working	
			C21	100 uuF mica	
			C22	0.025 uuF paper, 400 v.	
			C23	working	
			C24	100 uuF mica	
			C25	0.0025 uuF paper, 600 v.	
			C26	working	
			C27	0.4 uuF paper, 200 v.	
			C28	working	
			C29	0.025 uuF paper, 400 v.	
			C30	working	
			C31	20 uuF 200 P.V. Electrolytic	
			C32	9 uuF mica (neutralizing)	
			TRANSFORMER.		
			T1	Loudspeaker Transformer	XA8
			SWITCH.		
			S1	Battery/Tone Switch	22426
			LOUDSPEAKER.		
				5 inch (permanent magnet)	AC32

ALIGNMENT TABLE — Models 451-P & C.D.D.3

Order.	Connect "high" side of Generator to:	Tune Generator to:	Tune Receiver Dial to:	Adjust for maximum peak output.
1	Aerial section of gang (rear portion)	455 kc/s	540 kc/s	L8 (core)
2	Aerial section of gang (rear portion)	455 kc/s	540 kc/s	L7 (core)
3	Aerial section of gang (rear portion)	455 kc/s	540 kc/s	L6 (core)
4	Aerial section of gang (rear portion)	455 kc/s	540 kc/s	L5 (core)
5	Aerial section of gang (rear portion)	455 kc/s	540 kc/s	L4 (core)
Repeat above adjustments until the maximum output is obtained.				
6	* Inductively coupled to loop	540 kc/s	540 kc/s	L.F. Osc. Core Adj. (L2)
7	* Inductively coupled to loop	1500 kc/s	1500 kc/s	H.F. Osc. Adj. (C9)
8	* Inductively coupled to loop	600 kc/s	600 kc/s	L.F. Aerial Core Adj. (L1)
9	* Inductively coupled to loop	1500 kc/s	1500 kc/s	H.F. Aerial Adj. (C3)

* A coil comprising 3 turns of 16 gauge D.C.C. wire and about 6 inches in diameter should be connected between the output terminals of the test instrument and placed flat against the loop.

ALIGNMENT TABLE — Model 451-PZ

Order.	Connect "high" side of generator to:	Tune generator to:	Tune receiver Dial to:	Adjust for maximum peak output:
1	Aerial section of gang (front portion)	455 kc/s	540 kc/s	L9 (core)
2	Aerial section of gang (front portion)	455 kc/s	540 kc/s	L8 (core)
3	Aerial section of gang (front portion)	455 kc/s	540 kc/s	L7 (core)
4	Aerial section of gang (front portion)	455 kc/s	540 kc/s	L6 (core)
Repeat above adjustments until the maximum output is obtained				
5	Aerial section of gang (front portion)	540 kc/s	540 kc/s	L.F. Osc. Core Adj. (L4)
6	Aerial section of gang (front portion)	1500 kc/s	1500 kc/s	H.F. Osc. Adj. (C8)
7	* Inductively coupled to loop	600 kc/s	600 kc/s	L.F. Aerial Core Adj. (L2)
8	* Inductively coupled to loop	1500 kc/s	1500 kc/s	H.F. Aerial Adj. (C1)

* A coil comprising 3 turns of 16 gauge D.C.C. wire and about 6 inches in diameter should be connected between the output terminals of the test instrument and placed co-axial with the loop and distant not less than 1 foot from it.

SOCKET VOLTAGES — Models 451-P & C.D.D.3

Valves.	Bias Volts.		Screen Grid to Chassis Volts.		Anode to Chassis Volts.		Anode Current mA.		Filament Volts.	
	FB*	BS*	FB	BS	FB	BS	FB	BS	FB	BS
IR5 Converter	0	0	33†	25†	33†	25†	0.4	0.2	1.4	1.4
IT4 I.F. Amplifier	0	0	33†	25†	85	87	1.1	0.7	1.4	1.4
IT4 I.F. Amplifier	0	0	33†	25†	85	87	1.1	0.7	1.4	1.4
IS5 Detector	0	0	10†	10†	10†	10†	0.1	0.1	1.4	1.4
3V4 Output	-5.5	-3.5	85	60†	80	83	7.5	5.0	1.4	1.4

* FB = Full battery position of Battery/Tone Switch.

BS = Battery saving position of Battery/Tone Switch.

Measured with no signal input.

† These readings may vary depending on the resistance of the voltmeter used.

SOCKET VOLTAGES — Model 451-PZ

Valves.	Bias Volts.		Screen Grid to Chassis Volts.		Anode to Chassis Volts.		Anode Current mA.		Filament Volts.	
	FB†	BS†	FB	BS	FB	BS	FB	BS	FB	BS
IT4 R.F. Amp.	0	0	45	30	84.5	86.5	1.7	0.7	1.4	1.4
IR5 Converter	0	0	45	30	45	30	0.5	0.2	1.4	1.4
IT4 I.F. Amp.	0	0	45	30	84.5	86.5	1.7	0.7	1.4	1.4
IS5 Det., A.F. Amp. A.V.C.	0	0	25*	25*	30*	30*	0.07	0.07	1.4	1.4
3V4 Output	-5.5	-3.5	84.5	45	81	85	7.5	5.0	1.4	1.4

† FB = Full Battery position of Battery/Tone Switch.

BS = Battery Saving Position of Battery/Tone Switch.

* = Calculated from measured current. An ordinary voltmeter will register a lower value.
Measured with no signal input.

MECHANICAL REPLACEMENT PARTS

Item.	Part No.	Item.	Part No.
Cabinet	C80	Dial Scale, Model 451-P, 451-PZ: 21912, 22682 or 23300	
Cabinet back	22429	Model C.D.D.3	21844 or 23329
Cable, battery	20713	Drum, drive assembly	20130
Cable, volume control	20712	Knob, assembly	22433
Chassis end—		Knob	17603
Right-hand	22417	Socket, valve	19965
Left-hand	20124	Strip tag, 1 way	7628
		6 way	22423

D.C. RESISTANCE OF WINDINGS.

Winding.	D.C. Resistance in ohms.
Aerial Coil (451-P, C.D.D.3 only)	4
Tapped Portion	*
Aerial Coupling Coil (451-PZ only)	*
Oscillator Coil—	
Primary	3
Secondary	8
I.F. Transformer Windings—	
1st and 2nd I.F.	10
3rd I.F. (451-P, C.D.D.3 only)	20
Loudspeaker Input Transformer—	
XA8 Primary	425 or 510
Secondary	*

* Less than 1 ohm.

The above readings were taken on a standard chassis, but substitution of materials during manufacture may cause variations and it should not be assumed that a component is faulty if a slightly different reading is obtained.